

17,000; hemoglobin, 60 per cent. There was inflammation of the right saphenous vein which gradually subsided. This was followed by inflammation of the other veins in the left side of the neck, axilla, arm and chest. This subsided, to be succeeded by swelling in the other portions of the body. In all the patient had six relapses, each attended by more or less severe constitutional prostration. The patient finally recovered and was discharged in the nineteenth week in good general condition.

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## OTOLOGY

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UNDER THE CHARGE OF

CLARENCE J. BLAKE, M.D.,

EMERITUS PROFESSOR OF OTOLOGY IN THE HARVARD MEDICAL SCHOOL, BOSTON.

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**Prevalence of Ear Injuries and Diseases in the French Army.**—BRYANT (*Jour. Laryngol., Rhinol. and Otol.*, vol. xxxii, No. 11). The importance of the inclusion of provision for the care of the war deaf in the United States is emphasized by the author. In his record of observations in the French service the number of cases of ear injuries and deafness exceeded those of other observers in the English or Italian services, the ear cases being nearly as numerous as the eye patients, although there have been more cases of total loss of function among the eye cases than among the ear cases, with correspondingly more rapid recoveries, and a larger proportion of cases of very considerable impairment of hearing than of sight, the proportion of ear cases to the total number of cases in the evacuation hospitals being 16 per cent., about 80 per cent. of all ear cases showing considerable impairment of function. The nature of the injuries and their complications are included in three categories: rupture of the sound-transmitting apparatus of the middle ear and its complications; suppuration, acute and chronic; mastoiditis; mastoid abscess and its sequence; injuries of the terminal nerve-ending apparatus, of which the cochlear branch is always the more vulnerable, these injuries being of sudden occurrence or gradual implication and due severally to the larger use of high explosives and the more continued effect of powerful detonation than has ever been previously experienced. As the result of the explosion of powerful shell mines, hand grenades, bombs and rifle explosives causing, in addition to rupture of the membrana tympani, hemorrhage, ecchymoses, and, luckily, limited disintegration of the sound-transmitting apparatus, there is, in consequence of long exposure to loud noise, interference with the nutrition and causation of microscopic changes in the terminal end apparatus, a progressive impairment of hearing, grave in its extent and more or less permanent in its degree. Soldiers entering the war with an auditory apparatus intact are more liable to escape injury than those who have been the subject of previous inflammatory process of the middle ear or some measure of impairment or morbidity of the sound-transmitting apparatus. In addition all forms of dry otitis are subject

to a rapid increase in their tissue change under exposure to excessive irritation of loud sounds, the clinical histories of many of the ear patients showing the rapid sequence of degenerative, dry inflammatory conditions of the middle ear following ear injuries at the front. Ruptured tympanic membranes heal without suppuration, and with restoration of function in from five to twenty-one days under proper aseptic treatment, the duration of the impairment being much prolonged by the occurrence of suppuration, the convalescence being considerably shorter than in cases of middle-ear suppuration in civil practice, uncomplicated middle-ear suppuration yielding quickly to dry treatment, probably because the condition is primarily traumatic and not due to some underlying systemic condition. The treatment of rupture of the drum-head and the prevention of complications is effected by the encouragement of spontaneous repair, secured by the prevention of infection, the treatment being aseptic dry treatment, removal of the moisture in the meatus by wiping, insufflation of sterile boric acid powder and plugging of the external canal with sterile absorbent cotton painted with collodion, this treatment being repeated sufficiently often to secure the desired protection against a suppurative process, the treatment of suppurating middle ears and consequent complications being the same as that required in civil practice. In lesions of the auditory nerve the acute cases give the best prognosis, but complete restoration of function cannot be expected, the treatment of these cases being prolonged rest, with general hygienic attention. In cases of nerve lesions of gradual onset, as the result of continued exposure to loud noises, no improvement was to be expected.

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**Apparatus for the Application of Cold Air to the External Canal.**—GRANT (*L'Organe de l'Audition*, Juin et Aout, 1916). In view of the number of cases with sequence of acute or suppurative middle-ear disease examined for military service, the caloric test, by means of the injection of cold and warm water into the external auditory canal, is open to the objection of the possibility of reawakening the activity of a past inflammatory process, and less injury is likely to result by the application of either the galvanic test or, for purpose of control, a dry caloric process, for which purpose the author's instrument serves an excellent means of application. This instrument consists of a tube of metal, of good conductivity copper for instance, in the form of a spiral, with a removable tip to the end of the tube to be inserted into the external auditory canal, permitting removal and sterilization. The cone of tubing is covered with an absorbent gauze saturated with ethyl chloride, the evaporation of which chills the tube and, correspondingly, the air which is passed through it by means of a thermos cautery bulb, the desired degree of chill being attained in from ten to fifteen seconds after the saturation of the gauze. This instrument was first described as a cold-air labyrinth test apparatus in the *Lancet*, in July, 1914, and has achieved value in subsequent tests incident to war conditions.

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**Changing Methods and Advances in the Treatment of Progressive Deafness from Chronic Secretory Otitis Media.**—EMERSON (*American Laryngological, Rhinological and Otological Society, reported in Laryngoscope*, January, 1918). In this paper the author desires to draw atten-

tion to the importance of the consideration of possible remote causes of infection operating systemically to actuate progressive changes in the middle-ear sound-transmitting apparatus in distinction from those more immediate exciting causes in the nose and nasal pharynx, basing his communication upon the results of a questionnaire as to the expectation of improvement in such cases from treatment of the nasopharynx, excluding the epipharynx and inflation of the middle ear. To prove that positive improvement in hearing resulted from the cure of remote foci was not an easy problem, as the testimony of the patient, or the aurist, was of no scientific value unless such observations were supported by careful hearing tests, and records covering a term of years, for one was dealing with a chronic disease, subject to acute exacerbations, and varying acuity of hearing. Further, in order that such records should be available for analysis, such observations should extend over a period of from three to five years. From his study of the subject the following conclusions were drawn: "(1) Every case of chronic progressive middle-ear deafness has a primary focus; (2) such primary focus is usually constant for the individual; (3) every case showing variable hearing can usually be improved up to their best hearing; (4) Inflation in chronic cases is unscientific and harmful as a routine; (5) nasal obstructions do no harm to the middle ear unless infection is present; (6) foci wherever found are potential factors in the progress of chronic progressive otitis media; (7) no hearing test will forecast the improvement in a given case as long as we have a positive Rinné with variable hearing; (8) whatever the microscopic appearance of the membrana tympani, the cause of the deafness is active for a long time outside the middle ear as a toxemia or low-grade infection subject to acute exacerbations."

**Acute Suppurating Mastoiditis without Tympanitis: Perisinus Abscess, Phlebitis, Streptococcemia, Operation, Recovery.**—LONG says (*Ann. Otol., Rhinol. and Laryngol.*, June, 1917) that the case here reported by the author illustrates the possibility of extensive infection of the mastoid, with considerable destruction and serious complications, with only a minimum degree of evidence of disturbance in the tympanic cavity, which served as a transitional medium between the point of primary infection and its ultimate exhibition. A girl, aged twelve years, with the history of severe pain in the left ear of five days' duration, accompanied by chills, fever, nausea and vomiting, sleeplessness and delirium, with severe pain and tenderness in the left mastoid region. Temperature, 104.2; pulse, 120; respirations, 36, but without discharge from the external auditory canal, no apparent inflammatory process within the tympanic cavity, and with a membrana tympani moderately reddened, and with the larger bloodvessels injected. An incision of the drum-head liberated no fluid other than blood, and the gauze inserted in the auditory canal and removed the following day was marked only by the dry blood from the incision which had in no way tended to an abatement of the symptoms, except that there was less complaint of pain in the head; the patient was more toxemic, sleepless and delirious. On the ninth day symptoms of meningitis were still more pronounced and the simple mastoid operation was determined upon. The inner table was found carionecrotic, the greater portion being removed by

the curette, exposing small pockets of pus and masses of exudate which completely covered the sinus, and the bone was removed in every direction until healthy dura appeared. The examination of the vein from the knee to the tip of the jugular bulb gave no evidence of thrombus and a long incision gave a free hemorrhage from both ends without clots. This hemorrhage was controlled by packing, with a superposition of moist dressing. On the day following the operation there was no marked improvement, but the tongue was moist, but meningeal irritation had not increased. The laboratory finding of pus from the mastoid showed streptococci. On the next day, there being little change in the condition, a lumbar puncture was made. The spinal fluid was found normal and not under pressure. Under these conditions the treatment consisted in nursing, the necessary surgical dressings, and the patient made a good recovery, being able to leave the hospital twenty-three days after the operation.

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## PATHOLOGY AND BACTERIOLOGY

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UNDER THE CHARGE OF

OSKAR KLOTZ, M.D., C.M.,

PROFESSOR OF PATHOLOGY AND BACTERIOLOGY, UNIVERSITY OF PITTSBURGH,  
PITTSBURGH, PA.

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**Observations on the Stability of the Erythrocytes of the Ox, Pig and Sheep.**—Though it is customary to use sheep's corpuscles in preparing the usual amboceptor for the Wassermann test, experience has shown that these elements in the Noguchi method are not so stable nor so resistant to human sera as the corpuscles of various other animals. LYON (*Jour. Infect. Dis.*, 1918, xxii, 49) showed that erythrocytes of the ox and pig give even better results than those of the sheep. A working amboceptor was made after five intravenous injections of ox corpuscles into a rabbit and proved to be so satisfactory with the Noguchi method that the sheep system was gradually abandoned and the ox system used exclusively, employing two antigens, alcoholic extract of human heart and cholesterinized extract. Experiments were made by testing the erythrocytes of the pig as well as those of the sheep and ox with a varying number of human sera, 123 in all. In no instance were the sheep cells more resistant than those of the ox or pig. No satisfactory explanation of this fact can be given. There is no explanation nor proof other than the observed fact that human sera contains a natural antisheep amboceptor. Zoologically the sheep and the ox are closely related, and one would expect their corpuscles to behave similarly under the influence of a serum obtained from an animal as zoologically remote as man. On the other hand, the zoologically unrelated ox or pig behave similarly, so far as their erythrocytes are concerned, under the influence of human serum. The well-known ease with which the antisheep amboceptor can be prepared appears in part at least to depend on some inherent weakness of the sheep erythro-